In second and third degree open fractures a 2–3 stage procedure including local and free flap coverage is recommended. No infections, no nonunions and a very low rate of posttraumatic arthritis (11 versus 45 ORIF cases)[1] were seen in a small series with this minimal-invasive procedure combined with the use of a hybrid fixator.

Reference

1 Endres, et al. Unfallchirurg 2004;4:161–78.

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4A.1

4A: Trauma—Miscellaneous

Orthopaedic trauma research priority setting exercise and development of a research network

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Background: The UK orthopaedic trauma community recognises the importance of clinically relevant trials that have high utility and the potential to influence practice. Surgical trials are inherently difficult with problems around clinical equipoise, surgeon preference and participant acceptability, particularly comparing operative and non-operative treatments. Research activity can be maximised by collaboration in (a) the identification of important research questions and (b) involvement in clinical trials.
Methods: A Delphi survey was used to identify and prioritise the research questions felt to be of most importance and to determine consensus between the faculty members of the AOUK. A two-round process was used to elicit the research questions and then to rank them in order of priority.
Results: 255 members of the AOUK faculty were contacted to identify areas of contemporary practice that they considered needed quality research. 49 responders (19%) generated 147 questions. These were collated and the most frequently occurring questions (24) sent back out to all 255 for ranking by median scores. 121 (47%) responded to this second round and prioritised 10 clinical research questions. Literature searches for these 10 considered current knowledge of the subject. In addition, completed and ongoing research projects, advantages and disadvantages of undertaking a study and the most appropriate methodology were also considered. Feedback on the outcome of this exercise was reported to the faculty and a Research Conference planned to provide the opportunity for individuals to become involved, for current research projects to find support and new research projects to be developed.
Conclusion: The Delphi technique successfully prioritised research questions of importance to the AOUK membership, demonstrating an interest in developing a collaborative research strategy. Interested individuals and the level at which they might contribute were also identified, with a raised awareness of how to utilise the support of the national research networks.
Keywords: Delphi process; Research; Priority setting; Orthopaedic trauma

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Payment by results (PbR) in orthopaedic trauma: Where are we losing?

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Background: Clinical coding has attracted significant interest recently as it has become synonymous with reimbursement. We hereby present the results of first and largest study in the UK involving 547 orthopaedic trauma cases wherein a meticulous in-depth analysis was performed.
Study design: Completed audit cycle.
Objectives: To review the existing coding for orthopaedic trauma, to ascertain accuracy of procedural codes and to identify limitations, implement changes, re-evaluate and close the audit loop.
Methods: All orthopaedic trauma surgeries (244 cases) performed over 1 month (March 2006) were comprehensively analysed. The primary procedural accuracy of OPCS4.2, its limitations and loss of revenue due to missing codes (6 patients) were determined. Changes were implemented to streamline/optimise financial reimbursement and improve data quality/accuracy by education/training. Electronic discharge summaries were implemented to enhance efficiency. The audit loop was subsequently closed to evaluate implementation of these changes by re-auditing all trauma surgeries performed in the same month the following year, i.e. March 2007 (303 cases) against OPCS4.3 codes.

Results: The primary procedural accuracy was 95.38% (11/238 coding errors) and omissions in 6 patients resulted in net loss of revenue of £13,700 for March 2006. Following the closure of audit loop in March 2007 after implementation of changes, the primary procedural accuracy was 98.95% (3/286 coding errors) and cumulative loss of revenue due to omissions in 17 patients was £46,750.
Discussion: Despite improvement in coding accuracy to 99% on closure of audit loop, there were increased financial losses for trauma directorate. An in-depth analysis is being performed to identify lacunae (training/staffing issues) as the trauma workload rose by 25% in a year.
Conclusion: Accurate and ethical coding is challenging having impact on data quality, audit and research in addition to reimbursement. Literature emphasises on legible documentation, liaison between coders and clinicians and education/training of healthcare professionals.
Keywords: Clinical coding; Payment by results (PbR); OPCS codes; Data quality

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4A.3

A practical VTE risk assessment score tool for patients treated with lower limb cast immobilization

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We have devised a unique VTE risk assessment score for patients treated with lower limb cast immobilisation.

The patient's VTE risk factors have weighted scores dependent on the severity of risk. The resulting overall score decides whether the patient is commenced on LMWH or not. The reliability of the risk

assessment score in relation to completion rates and intra-observer error was audited.

Each patient, who was being treated with lower limb cast immobilisation, completed a form at initial presentation to fracture clinic which determined their treatment regime. The patients completed a second form once their plaster was removed and asked for their subjective assessment of the score form.

A total of 240 patients were studied with an average age of 45 years. 99% of patients filled out form correctly with only 3 forms spoilt. 10% of patients scored high risk of VTE and were given treatment with LMWH.

There was complete test/re-test agreement in scores in 189 patients (80%). Re-test scores for 218 (92%) had a difference of 1 point or less. Cronbach's alpha was 0.937.

93% of patients subjectively found the scoring system easy to understand and were able to comprehend the treatment rationale.

We propose that this risk assessment tool provides a practical, reproducible, user friendly, approach to VTE risk assessment in trauma patients. It is currently undergoing a process of validation and refinement.

Keywords: VTE prophylaxis; Lower limb cast

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4A.4

A biomechanical comparison of retrograde supracondylar nail with LISS plate in distal femur fractures

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Aim: To compare the fixation stability of LISS plate with locking screws against supracondylar nail in an unstable extra articular distal femur fractures.

Materials and methods: Fourth-generation composite saw bones specially designed for biomechanical testing was used in the study. Identical wedge of bone was removed from the supracondylar region creating a complete fracture extending to lateral cortex of the femur. Three sets of bones were stabilised with a LISS plate and locking screws. Another three sets were stabilised with a statically locked retrograde supracondylar nail. The constructs were tested for stability by axially loading those using MTS tension torsion machine and clip gauges were used to measure the movement at the fracture site. The constructs were tested with wedges on and wedges off separately to.

Results: The mean movement measured at the fracture site on application of an axial load of 1000 N was 0.97 cm and 3.05 cm for the plate constructs with and without the wedge of bone, respectively. The same for nail construct was 1.68 cm and 1.70 cm, respectively. Statistical analysis using *t*-test shows that in the absence of a wedge the plate construct is significantly weaker compare to nail construct. In the presence of the wedge there is no difference in the stability between the nail or plate constructs.

Discussion: Our study suggests that in case of medial bone loss, fixed angle LISS plate is not as stable as a load sharing retrograde nail. In the absence of bone loss LISS plate appears to be more stable although that difference is statistically not significant. Presence or absence of bone loss does not seem to affect the stability of a nail construct on axial loading.

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4A.5

Outcome in distal femur fractures. A comparison of LISS plates versus supracondylar nails

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Introduction: Distal femoral fractures are heterogeneous in nature. These fractures have been successfully treated by supracondylar femoral nails (SCN) for several years. The Less Invasive Stabilisation System (LISS) plate has become popular in recent years in treating distal femur fractures. The aim of this study is to compare outcome in distal femur fractures treated with LISS plating or SCN.

Methods: All distal femur fractures treated by LISS plate or SCN in a single hospital between May 2004 and January 2008 were included. Fracture classification (AO), time to radiological union and post-operative complications were recorded. Sixty-four patients fulfilled the inclusion criteria, 8 men; 56 women. Average age 83 years (range 16–96). In SCN group there were 10–32a, 4–33a and 1–32c and 6 periprosthetic fractures. In LISS group there were 10–33a, 6–33c, 5–32a, 4–33b, 1–32b, 1–32c and 16 periprosthetic fractures.

Results: Twenty-seven LISS plate patients had radiological union at 17 weeks on average (range 11–76), 11 SCN patients had radiological union at 19 weeks on average (range 7–156).

Proximal fixation pull out of the LISS plate was the most common complication. It occurred in six patients and each case required revision surgery. Two SCN patients experienced screw migration, requiring screw removal. One SCN case suffered a vertical femur fracture at the nail tip intra-operatively, this healed uneventfully.

There was one case of delayed union in each group: LISS plate 76 weeks, supracondylar nail 156 weeks. Two patients died from non-surgical causes post-operatively.

Discussion: LISS plate fixation achieved similar results as the SCN. LISS plate offered a stable fixation in a variety of fracture configurations. Proximal fixation pull out of the LISS plate was later minimised by bicortical fixation of the plate. We conclude that the LISS plate is an acceptable method of fixation in periprosthetic and comminuted distal femur fractures.

Keywords: LISS; Nail; Fracture; Femur

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4A.6

Economics of ankle fractures

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Aims: Before the swelling sets in, the ankle fractures provide a window of opportunity of few hours for the surgery to take place. If this vital opportunity is missed waiting times for the surgery can be prolonged. This study aimed to evaluate the economic cost of ankle fractures.

Method: A retrospective review of all ankle fracture patients operated during September 2007 to August 2008 in this hospital was performed. Electronic records were evaluated to identify the waiting times for the surgery and the reasons thereof. Individual patients were contacted on phone to identify their earnings loss due to the extra stay in hospital. Cost to the trust because of the extra stay was calculated as well.

Results: Total number of patients operated for ankle fracture during the study period was 159. The mean waiting time for surgery was 4.9 days (range 1–7.8 days). The mean duration of in-hospital stay for the procedure was 12 days. The commonest cause for the delay of surgery was soft tissue swelling (50%). The total number of